

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

ORDER NO. 88-022

SITE CLEANUP REQUIREMENTS AND RESCISSION OF  
ORDER NO. 86-63

NATIONAL SEMICONDUCTOR CORPORATION  
SANTA CLARA, SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. National Semiconductor Corporation (hereinafter called the discharger) manufactures printed circuits at a facility located on 2900 Semiconductor Drive, Santa Clara. The discharger has occupied this site since the 1970s.
2. Subsurface investigations initiated in early 1982 revealed significant levels of organic chemical pollution in soils and groundwater beneath the site and extending beyond the site boundary. The pollution was apparently caused by leaks in underground waste solvent tanks and piping systems, and spills in transportation and loading and unloading of solvent. Principal pollutants included trichloroethylene (TCE), trans- and cis- 1,2-dichloroethene (DCE), 1,1,1-trichloroethane (TCA), perchloroethene (PCE), Freon 113, xylenes, ethylbenzene, dichlorobenzene, acetone and alcohols.
3. The discharger and adjacent property owners and facility operators have undertaken investigations to define the extent of pollution. As of November 1987, the pollutant plume extends horizontally a distance of over 4,000 feet from the onsite pollution sources and vertically to a depth of more than 45 feet.
4. On August 20, 1986, the Board adopted Order No. 86-63 prescribing Waste Discharge Requirements for establishing tasks and a time schedule to complete definition of the extent of offsite pollution and implement plume stabilization measures. Modification of these requirements is needed to address onsite soil pollution and to update the schedule to complete further investigation plume stabilization measures and the final remedial action program.

5. Pollutants from the discharger's property have migrated to merge with a pollutant plume emanating from the former United Technologies Corporation (UTC) site across the street and downgradient of NSC at 1050 E. Arques Avenue, Sunnyvale.
6. NSC and UTC reached an agreement in September 1987 that NSC will assume the full responsibility for implementing programs to contain the groundwater pollution plume at the former UTC site.
7. The discharger is in the process of designing two additional plume stabilization and containment systems in the area upgradient from the existing Monolithic Memories Inc. facility on 1165 E. Arques Avenue and at locations along Titan Way, Sunnyvale. Design of the two groundwater extraction systems is expected to be completed by February and July 1988, respectively.
8. The discharger has implemented onsite soil removal action consisting of the removal of approximately 300 cubic yards of highly polluted soils. Additional studies are needed to more precisely define the extent of soil pollution and evaluate alternatives for remedial action.
9. The discharger has installed and is operating 23 extraction wells onsite and 3 wells offsite to stabilize the pollutant plume. These wells are currently removing about 140,000 gallons per day (GPD) of polluted groundwater. The groundwater is treated with air stripping towers and discharged to a storm drain tributary to Calabazas Creek and San Francisco Bay. Discharge is regulated by a NPDES Permit (Order No. 87-15) adopted by the Board on March 15, 1987.
10. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 16, 1986. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and groundwaters.
11. The existing and potential beneficial uses of the groundwater underlying and adjacent to the facility include:
  - a. Industrial process water supply
  - b. Industrial service supply
  - c. Municipal and Domestic supply
  - d. Agricultural supply
12. The discharger has caused or permitted, and threatens to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance and a threat to the environment.

13. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.
14. Offsite plume stabilization and containment measures need to be implemented to alleviate the threat to the environment posed by the continued migration of pollutants and to provide a substantive technical basis for designing and evaluating the effectiveness of final cleanup alternatives.
15. The Board has notified the dischargers and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.
16. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the discharger shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.
2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS

1. The storage, handling, treatment or disposal of polluted soil or groundwater shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
2. The discharger shall conduct monitoring activities as needed to define the current local hydrogeologic conditions, and the lateral and vertical extent of soil and groundwater pollution. Should monitoring results show evidence of plume migration, additional plume characterization may be required.

C. PROVISIONS

1. The discharger shall submit to the Board technical reports on self-monitoring work performed according to a program prescribed by or amended by the Board's Executive Officer.
2. The discharger shall comply with Prohibitions A.1., A.2., and A.3., and Specifications B.1. and B.2. above, in accordance with the following time schedule and tasks:

COMPLETION DATE/TASK:

- a. 1) COMPLETION DATE: April 15, 1988

TASK: COMPLETION OF WORKPLAN: Submit a proposed workplan to complete a report which will fulfill the requirements for a RI/FS (remedial investigation/feasibility study) and draft Remedial Action Plan. The proposed workplan shall provide for the completion of report which is consistent with Subpart F of the National Contingency Plan (40 CFR Part 300); Superfund Amendments and Reauthorization Act of 1986; CERCLA/SARA guidance documents with reference to Remedial Investigations and Feasibility Studies; Section 25356.1(c) of the California Health and Safety Code, and the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California."

- b. 1) COMPLETION DATE: March 15, 1988

TASK: IDENTIFY SOURCES AND CHARACTERIZE SOIL POLLUTION: Submit a technical report acceptable to the Executive Officer containing a proposal to identify all pollution sources onsite and to define the horizontal and vertical extent of soil pollution onsite.

- 2) COMPLETION DATE: July 15, 1988

TASK: COMPLETION OF IDENTIFICATION AND CHARACTERIZATION: Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 2.b.1). The report should contain a detailed proposal to evaluate specific alternatives for soil cleanup and specific implementation time schedule to complete proposed tasks.

- c. 1) COMPLETION DATE: March 15, 1988

TASK: GROUNDWATER POLLUTION CHARACTERIZATION: Submit a technical report acceptable to the Executive Officer containing a proposal to define the horizontal and vertical extent of the offsite groundwater pollution in the area north of the former UTC facility at 1050 E. Arques Avenue, and in the area north of Monolithic Memories Incorporated, Sunnyvale.

- 2) COMPLETION DATE: September 15, 1988

TASK: COMPLETION OF GROUNDWATER CHARACTERIZATION: Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 2.c.1).

- d. 1) COMPLETION DATE: June 15, 1988

TASK:EVALUATE EXISTING HYDRAULIC CONTAINMENT MEASURES: Submit a technical report satisfactory to the Executive Officer which evaluates the effectiveness of the existing onsite hydraulic containment system to prevent any further pollutant migration from the National Semiconductor Corporation facility. Such an evaluation shall include, but need not be limited to, confirmation of the flow capture zone of the extraction wells, establishment of the cones of depression by field measurements, and presentation of chemical monitoring data.

b) MODIFICATION TO EXISTING CONTAINMENT MEASURES: Specific modifications to the system and an implementation time schedule shall be proposed in the event that existing onsite hydraulic control system is demonstrated not to be effective.

- 2) COMPLETION DATE: September 15, 1988

TASK: COMPLETION OF MODIFICATIONS TO EXISTING CONTAINMENT MEASURES: Submit a technical report acceptable to the Executive Officer documenting completion of the any tasks identified in the technical report submitted for Task 2.d.1.b).

- e. 1) COMPLETION DATE: June 15, 1988

TASK: OFFSITE PLUME STABILIZATION AND CONTAINMENT MEASURES AT CHRISTENSEN PROPERTY ALONG EAST ARQUES AVENUE: Submit a technical report acceptable to the Executive Officer documenting completion of the plume stabilization system proposed by NSC in the upgradient area near Monolithic Memories Inc. facility on 1165 E. Arques Avenue, Sunnyvale.

- 2) COMPLETION DATE: March 15, 1988

TASK: GROUNDWATER POLLUTANT PLUME STABILIZATION AND CONTAINMENT OFFSITE SYSTEMS AT FORMER UNITED TECHNOLOGIES CORP. (UTC) SITE: Submit a technical report acceptable to the Executive Officer containing a proposal to install necessary plume stabilization and containment systems to prevent further offsite pollutant migration from UTC's former facility on 1050 East Arques Avenue, Sunnyvale.

- 3) COMPLETION DATE: June 15, 1988

TASK: COMPLETION OF PLUME STABILIZATION AND CONTAINMENT SYSTEMS AT UTC SITE: Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 2.e.2).

- f. 1) COMPLETION DATE: July 15, 1988

TASK: OFFSITE PLUME STABILIZATION AND CONTAINMENT MEASURES IN AREA BETWEEN HIGHWAY 101 AND TITAN WAY: Submit a technical report acceptable to the Executive Officer which contains an evaluation of plume stabilization and containment alternatives for the specified area, a recommended plan, and an implementation time schedule.

- 2) COMPLETION DATE: December 15, 1988

TASK: COMPLETION OF OFFSITE PLUME STABILIZATION AND CONTAINMENT MEASURES IN AREA BETWEEN HIGHWAY 101 AND TITAN WAY: Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 2.f.1).

3) COMPLETION DATE: April 15, 1989

TASK: a) EVALUATE OFFSITE PLUME STABILIZATION AND CONTAINMENT MEASURES: Submit a technical report acceptable to the Executive Officer which evaluates the effectiveness of the offsite plume stabilization hydraulic containment systems. Such an evaluation shall include, but need not be limited to, an estimation of the flow capture zone of the extraction wells, establishment of the cones of depression by field measurements, and presentation of chemical monitoring data, if extraction wells are proposed.

b) MODIFICATIONS TO OFFSITE PLUME STABILIZATION AND CONTAINMENT MEASURES: Specific modifications to the system and an implementation time schedule shall be proposed in the event that the hydraulic control systems are demonstrated not to be effective in containing and removing the offsite pollutants.

4) COMPLETION DATE: August 15, 1989

TASK: COMPLETION OF MODIFICATIONS TO OFFSITE PLUME STABILIZATION AND CONTAINMENT SYSTEMS: Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 2.f.3).

g. COMPLETION DATE: December 15, 1989

TASK: PROPOSED FINAL REMEDIAL OBJECTIVES AND ACTIONS: Submit a technical report acceptable to the Executive Officer containing the result of the remedial investigation; an evaluation of the installed offsite plume stabilization and containment measures; a feasibility study evaluating alternative final remedial measures; the recommended measures necessary to achieve final cleanup objectives; and the tasks and time schedule necessary to implement the recommended final remedial measures.

3. Technical reports for groundwater and soil investigation field work shall contain a CERCLA/SARA Sample Plan or addendum of the previously approved Sample Plan.

4. The submittal of technical reports evaluating proposed final remedial measures will include a projection of the cost, effectiveness, and impact on public health, welfare, and environment of each alternative measure. The Remedial Investigation and feasibility Study shall be consistent with guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300); Superfund Amendments and Reauthorization Act of 1986; CERCLA/SARA guidance documents with reference to Remedial Investigations and Feasibility Studies; Section 25356.1(c) of the California Health and Safety Code, and the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California."
5. If the discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the discharger(s) shall promptly notify the Executive Officer. In the event of such delays, the Board may consider modification of the task completion dates established in this Order.
6. Technical reports on compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted monthly to the Board commencing on April 15, 1988. On a monthly basis thereafter, these reports shall consist of a brief letter report that, (1) summarizes work completed since submittal of the previous report, and work projected to be completed by the time of the next report, (2) identifies any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles, and (3) includes, in the event of non-compliance with Provisions of this Order, written notification which clarifies the reasons for non-compliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order.
7. On a quarterly basis, commencing with on April 15, 1988, the technical report shall include, but need not be limited to, updated water table and piezometric surface contour maps, pollution concentration contour maps for all affected water bearing zones, cross-sectional geological maps describing the hydrogeological setting of the site, and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying adjacent facilities and structures.



8. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist or professional engineer.
9. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.
10. The discharger(s) shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.
11. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:
  - a. Santa Clara Valley Water District
  - b. Santa Clara County Health Department
  - c. City of Santa Clara and City of Sunnyvale
  - d. State Department of Health Services/TSCD
  - e. Environmental Protection Agency

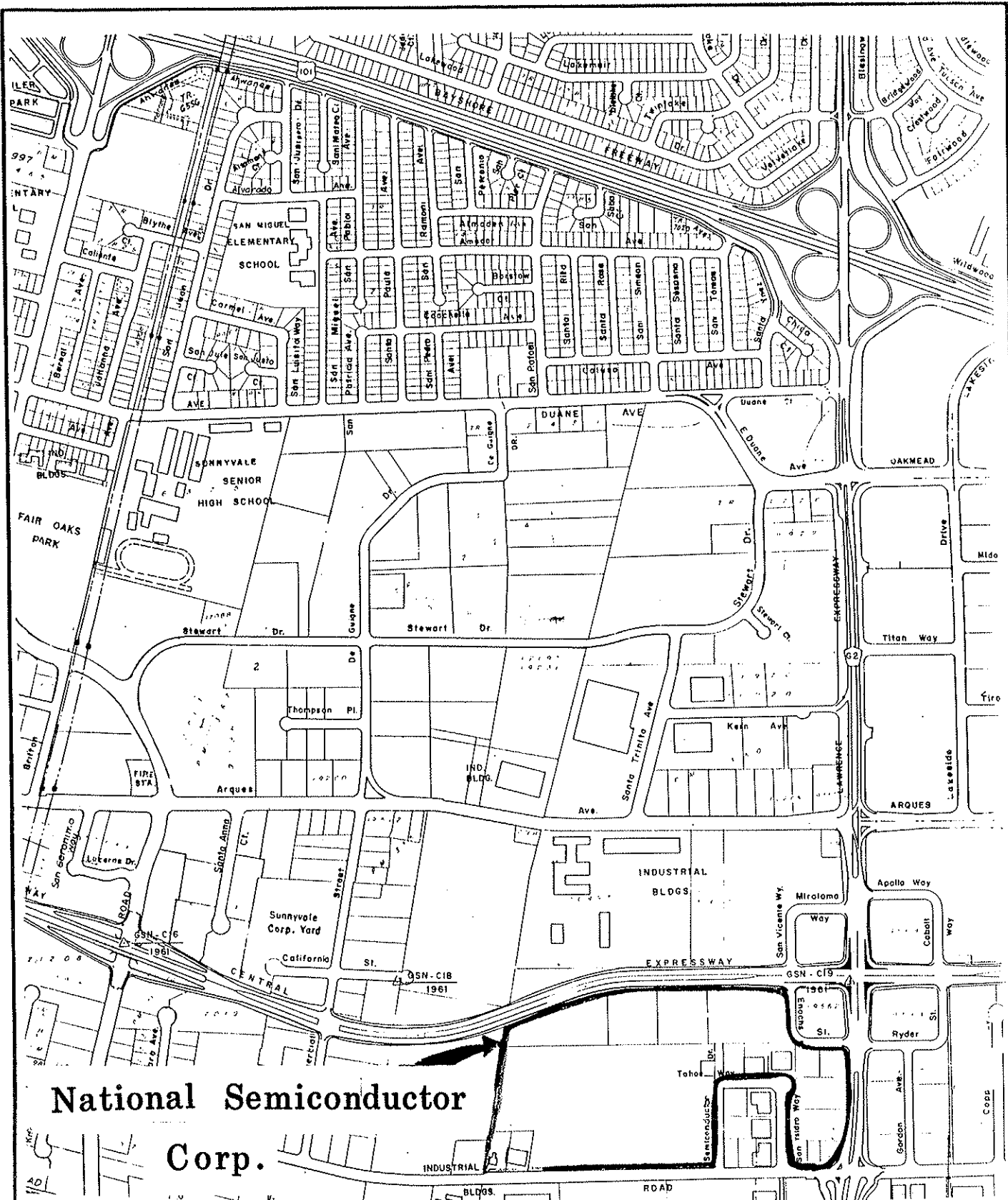
The Executive Officer may additionally require copies of correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order to be provided to the U.S. Environmental Protection Agency, Region IX, and to a local repository for public use.

12. The discharger(s) shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:
  - a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
  - b. Access to copy any records required to be kept under the terms and conditions of this Order.
  - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
  - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

13. The discharger(s) shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order.
14. If any hazardous substance is discharged in or on any Waters of the State, or discharged and deposited where it is, or probably will be discharged in or on any Waters of the State, the discharger shall report such a discharge to this Regional Board, at (415) 464-1255 on weekdays during officer hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-office hours. A written report shall be filed with the Regional within five (5) working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons notified.
15. This Order supercedes Order No. 86-63. Order No. 86-63 is hereby rescinded.
16. The Board will review this Order periodically and may revise the requirements when necessary.

I, Roger B. James, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on February 17, 1988.

  
Roger B. James  
Executive Officer



# National Semiconductor Corp.

LOCATION MAP

STATE OF CALIFORNIA  
REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

National Semiconductor Corporation  
2900 Semiconductor Drive  
Santa Clara, Santa Clara County

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| DRAWN BY: | DATE: | DRWG. NO. |
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